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(54) Title: COMPUTER NETWORK BASED SYSTEM AND METHOD FOR COLLECTING AND REPORTING DATA

(57) Abstract

A computer network based system and method for collecting and reporting data, preferably market research data in real-time. Real-time feedback enables timely response to emerging issues, enhances training/feedback for support staff and gives the ability to promptly see problem areas through the users' eyes. The present invention collects and reports market research data. A software implemented data collection tool (16) displays to a client (18) over a computer network (2) to elicit data from the user. The collection tool (16) returns the elicited data to a research database (6), which stores the elicited data. The research database (6) is accessible to one or more designated persons, typically a commissioner of the research work and/or someone with authority.

The diagram illustrates a computer network based system for collecting and reporting data, divided into two main sections: DATA COLLECTION and REPORT VIEWING.

DATA COLLECTION: This section shows a central CLOUD labeled "NETWORK" (2). To the left, a dashed box labeled "DATA SOURCE" (14) contains four components: "2ND SURVEY" (20), "1ST SURVEY" (22), "3RD SURVEY" (24), and "4TH SURVEY" (26). Arrows labeled "REQUEST" point from these surveys to the network. To the right, a dashed box labeled "DATA SINK" (12) contains a "RESEARCH TOOL" (16). An arrow labeled "DATA" points from the network to the research tool. Further right, a dashed box labeled "USER COMPUTER AND PERIPHERALS" (18) contains a "USER APPLT." (10). An arrow labeled "REQUEST" points from the user computer to the network, and an arrow labeled "DATA" points from the network to the user computer.

REPORT VIEWING: This section shows a "RESULTS" database (6) on the left, connected to a "DATA SOURCE" (14) which contains a "CSD DATA" component (8). An arrow labeled "REQUEST" points from the results database to the data source. To the right, a dashed box labeled "DATA SINK" (12) contains a "RESEARCH TOOL" (16). An arrow labeled "DATA" points from the data source to the research tool. Further right, a dashed box labeled "USER COMPUTER AND PERIPHERALS" (18) contains a "USER APPLT." (10). An arrow labeled "REQUEST" points from the user computer to the research tool, and an arrow labeled "DATA" points from the research tool to the user computer.

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As computer network technology, in particular Internet technology, has rapidly developed in recent years and businesses and other organizations have found or been presented with more effective ways to take advantage of this Internet technology, the World Wide Web has taken on ever increasing importance in the world of commerce. More and more organizations are using the Internet as a primary channel of communication, supplementing or even replacing traditional lines of communication such as face-to-face meetings, mail, fax and phone. A recent study by

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AU	Australia	GA	Gabon	LV	Latvia	SE	Sweden
BE	Belgium	GE	Georgia	MC	Monaco	TJ	Tajikistan
BA	Bosnia and Herzegovina	GH	Ghana	MD	Moldova	TG	Togo
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Forrester Research, Inc. estimates that Internet commerce will grow forty fold over a period of five years, from US\$8 billion in 1997 to US\$327 billion in goods and services by the year 2002.

Even now the Internet plays a very significant role as a distribution channel, a point of contact with customers, a marketing and advertising medium and a channel for services and support, and the significance of this role will only increase in the future. Concordant with this growing significance of commerce over the Internet, in order that organizations can maintain and improve on the standards of information they share via the Internet, there is a rapidly growing need for feedback on the organizations' Internet presence, and thus a need for tools which can quickly and efficiently collect and report relevant market research data characterizing and evaluating the organizations' Internet efforts.

Traditionally, market research has been conducted by way of a survey completed during an interview between a market researcher and a consumer, either face-to-face or over the telephone. As an alternative, the survey may be mailed on paper or on computer diskette to the consumer for them to complete and return. The survey contains a series of questions designed to elicit relevant information from the consumer, which can be collated and analyzed with answers to the survey from a number of other consumers to provide a characterization and/or an evaluation of particular facets of the organization, services or products of the entity for whom the survey is being conducted.

Many companies or businesses initially developed on line survey tools in-house. More recently, computerized survey tools have been provided, whereby survey or other market research information can be elicited over the Internet. One example of such a tool is 'SurveySez', which allows an organization to create their own HTML-based survey as a page or pages hosted on the SurveySez Internet Web Site. The organization then includes a link to the survey on their own Web site.

A second example is 'SurveySite', which uses a pop-up invitation implemented in Java which acts as a link to an HTML survey hosted at a separate site. A report is generated and

delivered to the organization commissioning the research at the end of the survey's life, e.g. after a pre-determined number of surveys have been responded to.

Another example is 'CLTRResearch', offering a survey in flat HTML. Similarly to 'SurveySite' a report is generated at the conclusion of the complete survey period. Yet another example of an HTML survey with a report generated on completion is 'KB&P'. In the latter example, the respondents to the survey may either be visitors to a particular Web Site, as in the above examples, or previously registered participants.

A final example, which employs a very different methodology to the previous examples, is 'RelevantKnowledge'/Nielsen Group. A group of people (called a web panel or research panel) agree in advance to have their Internet usage monitored, and then periodically a log of which Web Sites these people have visited is uploaded to a central collection point, and a report is generated.

Summary of the Invention

The present invention provides a computer network based system and method for collecting and reporting data, preferably market research data in real-time. Whatever the application to which the invention is applied, particularly where it is market research oriented, the real-time feedback it provides can enable timely response to emerging issues, can enhance training/feedback for support staff and can give the ability to promptly see problem areas through the users' eyes.

From one aspect, the invention provides a computer network based, preferably Internet based, system and method for collecting and reporting data, preferably market research data. A software implemented data collection tool is deployed to a client on the computer network (for example a Web browser) to elicit data from a user accessing the computer network through that client. The collection tool returns the elicited data to a research database, which stores the elicited data. The research database is made accessible to one or more designated persons, typically a commissioner of the research work and/or someone with their authority.

The data collection tool can be deployed to successive users of the computer network, accessing the network via the same or, more typically, a different client. Each time the collection tool is deployed and data returned, the research database is updated, and thus updated, real time results are made accessible to the designated person(s).

Preferably, the deployment of the data collection tool is initiated by the user visiting a particular pre-defined trigger page of information on the computer network, or any one of a number of such pre-defined trigger pages. Typically, each trigger page will be associated with a particular information site of the organization commissioning the research. For example, where the system is implemented on the Internet, each trigger page may be a page of their Web site. If there are two or more trigger pages at an information site, the system is preferably controlled so as to suppress deployment of the data collection tool more than once during any single visit to the information site by a user. For instance, the data collection tool can function to detect whether or not it has previously been run during the current browser session in order to prevent multiple deployments.

In some embodiments of the invention, further control is exercised over the deployment of the data collection tool. For instance, a first stage in the deployment of the collection tool may be the issue of an invitation to the user, for example giving them the option to decline to take the survey or other data collection means if they wish. If desired, any such decision to decline to take a survey may be recorded in the research database. A further possibility is to control the frequency at which the data collection tool is deployed. That is to say, the tool need not be deployed each time a user visits a trigger page, but rather can be presented only to every n^{th} user to visit the page, or to a random one of every n users (where n is any real integer greater than 1) and/or only after lapse of a predetermined time interval following a preceding deployment of the tool. Yet a further possibility, where the users of the computer network are identified with a user name or other identifier such as machine or source IP address, is to place limitations on the identity of the users to whom the data collection tool is presented. For instance, it may be desirable to exclude certain

named/identified users from the market research or other data collection process, for example employees of the research commissioner. In addition or alternatively, particularly on computer networks such as the Internet where individual users do not necessarily require positive identification as a condition of access, specific network addresses (e.g. IP addresses on the Internet) can be blocked to provide a similar control over the persons to whom the data collection tool is presented.

Once the data collection tool has been deployed, the system preferably has the ability to delay the actual commencement of data elicitation. For example, the data collection tool may have the ability to linger within the client for a period of time after its deployment, during which time the client device can be operated to perform other functions. For example, it may be desirable to deploy the data collection tool when a user first arrives at an information site, but to delay elicitation of the market research data, or other data, until after the user has had an opportunity to explore the site more fully.

In a typical implementation of the invention, the data collection tool will provide a survey or other data form, presenting the user with a series of questions to be answered. For some questions the user may be presented with a series of possible responses from which they must choose one, or in some cases one or more. Other questions may require a response by way of a value on a continuous scale, and another option is to allow the user to enter free text answers. Where there is some control placed on the response to a question, such that the response is predictable, the system may be designed to use the response to that question to decide whether a subsequent question in the survey be used. Once all of the answers to the survey have been provided, the data collection tool delivers the answers to the research database for access by the reporting tool at the report site. In addition to the answers themselves, the data collection tool may also collect and return other types of information, for example information indicating the state of completion of a survey, or other similar sample incidence information.

In some embodiments of the system, the data collection tool conducts one or more analyses of the data to produce one or more report results, which are stored in the database. The analysis or analyses may be relatively simple, for example calculating occurrences of a particular class of answer as a percentage of total answers to a question, or relatively complex, for example deriving a report result based on answers to a number of different questions. The data collection tool may also directly store the raw information elicited as report results in the database, for example answers to one of more of the questions presented in a survey may be stored without further analysis. Furthermore, in preferred embodiments, the at least some report results are also available in an interactive query format, allowing someone accessing the results via the report site to specify an analysis based on a combination of any two, or possibly more than two, of the non-free text questions of a survey.

The research database is preferably accessible via a report site on the computer network which, if desired, can provide secure access to the database. For instance, the report site may be set up so that a pre-arranged password is required before the report site enables the research database to be accessed, the password only being made available to pre-authorized designated persons. In this way, the results of the market research, or other data collection process, can be made available only to the desired parties, for example the commissioner of the research, or persons with their express consent.

The report site preferably also provides a user friendly front end to the database, and comprises or works in conjunction with a software implemented report tool to extract relevant report results from the database and present them to the designated person(s) as an appropriately formatted report. Typically, the results will be presented graphically as bar charts, pie charts, tables or the like, but any one of a large number of other graphical or textual formats are possible. It is particularly preferred that the report tool has the capability to manipulate the report results and/or carry out one or more analyses of them, in order to present the designated person(s) with a variety of differently focused reports. For example,

access name and corresponding password which they use to enter the report site, the report site and report tool utilizing the unique access name, if verified with the corresponding password, to determine which report results should be made accessible to a particular designated person.

Brief Description of the Drawings

The foregoing aspects and many of the attendant advantages of this invention will become more readily appreciated as the same becomes better understood by reference to the following detailed description, when taken in conjunction with the accompanying drawings, wherein:

FIGURE 1 schematically illustrates a market research data collection and reporting system that operates in accordance with an embodiment of the present invention;

FIGURE 2 is a block diagram showing the structure of the client side component of the data collection tool of the system of FIGURE 1;

FIGURE 3 schematically illustrates the procedure by which the system of FIGURE 1 collects data;

FIGURES 4 to 17 show screen shots from an exemplary survey conducted over the Internet using the inventive system; and

FIGURES 18 to 28 show pages from an exemplary report site according to the present invention.

Detailed Description of the Preferred Embodiment

The present invention is a computer network based system and method for collecting and reporting data, preferably market research data in real time. Currently, the primary application of the invention is seen to be in the field of gathering customer feedback regarding the quality of services, information and products that are being provided by an organization doing business on the World Wide Web, and the following description of an exemplary illustrates such an application. However, the invention is also applicable to gathering other types of data, whether market research data or other informational data, in any of a number of

the system may allow the designated person to select one of a number of focused reports, or even to define the focus of the report themselves.

Advantageously, the data collection tool can be deployed from a server (referred to hereinafter a "survey server") associated with the computer network, other than a server (referred to hereinafter as an "information server") on which the information site containing the trigger page or pages is located. This arrangement, unlike prior survey systems, can avoid placing additional load on the information server. The research database is also preferably resident on a server (referred to hereinafter as a "report server") other than the information server, as is the report site and report tool. The research database, the report site and the report tool are preferably resident on a single report server, which conveniently may be the same server as the survey server from which the data collection tool is deployed.

In a development of the present invention, the data collecting and reporting system elicits information from the users of a plurality of distinct information sites on the computer network, which may be resident on the same or different information servers. For each information site the same data collection tool and/or the same report tool may be employed. Alternatively, custom versions of one or both of these tools may be provided for use with one or more of the information sites served. If different, customized collection and report tools are used for respective ones of the information sites served by the system, they are preferably each based on a respective one of a master data collection tool and a master report tool, which provide common functions generally required by most, if not all market research applications or, if applicable, other data collection applications to which the system applies. In this way, the effort required to provide a custom data collection and/or report tool for any particular application can be minimized.

Where multiple information sites are served, all of the data elicited may be stored in a single research database, but access to the data is preferably controlled so that the report results associated with the distinct information sites are only accessible to the respective designated person or persons. For example, each designated person may be given a unique

computer network environments. In this sense, it can be considered as a general purpose market research tool.

Referring to FIGURE 1, a data collection and reporting system is implemented on the World Wide Web, data exchange between various components of the system being effected over the Internet 2. Visitors to a specific information site 4 on the Web, typically a Web site of the research commissioner, are presented with a survey including a number of questions. The answers to these questions given by the visitors are stored in a database 6 and made immediately accessible to a designated person or persons, typically the research commissioner, by way of one or more user friendly survey reports available on-line over the Internet 2 at a report Web site 8. The survey remains active for a finite period defined by the number of visitors to take the survey, an overall time duration, or a combination of the two. At the end of the complete survey period, the results remain accessible to the designated person(s) for a further pre-defined post-survey time period. At any time during pendency of the survey or during the post-survey period, the survey results can be down-loaded from the survey database 6, in order that a permanent record may be kept by the research commissioner. Additionally, any of the graphical reports at the report site 8 can be captured using common methods for HTML capture and reposted to any other Web site (for example in order that the research commissioners intranet can be used to share the information within an organization) or the graphics can be incorporated into any compatible tool for presentation. The main elements of a currently preferred embodiment of the system are: (a) a data collection tool, having both server side and client side components, for presenting the user with the survey and collecting their answers as survey data; (b) a survey database 6 for storing the survey data, either in raw form or following one or more analyses or manipulations, as survey results, and which also contains survey configuration data and survey question text; (c) a report site 8 through which the designated person can access the survey results; (d) a report tool 10 which is implemented within the report site 8 to present the designated person with the survey results in the form of one or more focused survey reports; and (e) a trigger, resident on a trigger page

12 of an information site 4, typically a Web page of the research commissioner, to initiate the survey when the visitor requests that trigger page 12.

Advantageously, a single survey server 14 operating the inventive system may be used to simultaneously conduct more than one survey, each survey being associated with the same or a different Web site or page on the World Wide Web. For each Web site or page the same fundamental data collection tool is employed, although an expanded survey (including additional questions) or otherwise customized survey (e.g. including revised questions and/or graphic images) may be used. Where multiple surveys are being conducted, the survey results from each survey are stored in the database 6 in a manner identifying them with their respective survey, in order that the report site 8 and report tool 10 can distinguish them. It is also likely that the designated person(s) will be different for the different surveys. Consequently, each designated person is assigned a unique user name, verified by a password, for accessing the report site 8 and hence the survey results stored in the survey database 6. In this way it is possible to restrict access to the survey results associated with particular surveys only to respective authorized designated persons.

In the preferred implementation of the data collection tool, there is a capability to suppress presentation of the survey to the visitor in certain circumstances. More particularly, when initially deployed the survey applet 16 conducts a validation operation to determine whether to proceed with the survey, in which it is determined, for example: (a) whether the implementation of the survey is supported by the visitor's Web browser 18; (b) whether the survey has been previously executed in the current browser session; and (c) whether the IP address from which the visitor is accessing the network is on a list of addresses excluded from participation in the survey. If these and/or other validation tests are passed, that is to say, for example, the visitor's browser 18 will support the survey, the survey has not been previously executed and the visitor is not excluded, the applet 16 proceeds to the next step in the procedure. If any one of the tests is failed, the survey applet 16 exits without ever presenting itself to the user.

window separate from the main browser window, so it may be minimized or lowered while the visitor continues to browse the information Web site 4. When the user is ready to commence answering the survey questions, they simply activate the "START SURVEY" icon as they would any other icon (e.g. by clicking on it with their mouse), and they are presented with the first question.

Considering the data collection tool in more detail. As mentioned above, the data collection tool comprises both server side and client side components, which communicate via the Internet 2 using the standard HTTP protocol. The server side components are resident on, and are executed by the survey server 14. They are currently implemented as a series of servlets, which run under the JavaWebServer 1.1 environment. They could, however, be implemented to run under any HTTP server that supports Java servlets or other equivalent, applets. Currently there are four server side components.

First, there is a survey servlet 20 which, at the request of the client side component 16, extracts the appropriate survey configuration data from the survey database 6 and posts it to client side component 16. Where the system is set up to handle multiple surveys, in order that the survey servlet 20 can extract and post the correct survey configuration data for the survey that is to be activated, the survey servlet 20 is first passed a pre-assigned, unique survey job code by the client side component 16. The client side component 16 itself obtains the unique survey job code from the trigger on the trigger page 12, the code being one component of the trigger. Using the unique survey job code, the survey servlet 20 retrieves the appropriate configuration data from the survey database 6, puts it in name-value pair format and posts it to the client side component 16. In currently preferred embodiments, the configuration data includes the following elements:

"Survey class name" - this is a class file that determines the question set for each survey. Each different survey may be associated with its own unique survey class, in which case the text of the questions, which make up the survey can be coded into the class. However, in a preferred implementation a generic

Also in this preferred implementation, the frequency at which the survey is presented to visitors to the trigger page 12 can be controlled. That is to say the survey need not be presented to each visitor who passes the above validation operation. This frequency control is implemented by setting an invitation frequency (f) within the survey applet 16. The value f is an integer which determines the probability that a user will be presented with the survey. If f is set to 1, every visitor who passes the validation will be presented with the survey, whereas integers greater than 1 will reduce the probability that a given visitor will be presented with a survey. For instance, the survey applet 16 can be configured to randomly present the survey to one out of every n visitors, where $f = n$. In the current implementation, a visitor is presented with an invitation if the results of $\text{floor}(R \times f)$ equals 0, where R is a pseudo random number between 0 and 1. The $\text{floor}()$ function truncates the product of $R \times f$, that is to say subtracts the fractional part of the product, to give an integer value. In the preferred implementation, the value f can be changed during the course of a survey, allowing control of the period during which data collection is completed, providing the unique ability to ensure collection of a representative sample of site traffic.

The survey applet 16 also has the capability to provide a further front end filter to the survey. If desired, rather than launching straight in to the full survey itself, the visitor can be presented with an invitation to take the survey. This invitation can give the visitor the opportunity to decline to take the survey (such a decision to decline itself being recorded as the survey data), can be used to "screen" for a specific type of visitor (e.g. visitors with a specific connection speed or other screening information), and can also be conveniently used to offer the visitor an incentive for completing the survey.

Whatever front end filters are used, if and when the full survey is launched, the survey applet 16 presents the visitor with a "START SURVEY" icon, along with instructions on the completion of the survey and, if desired, a suggestion to them that they complete their business at the Web site before taking the survey, in order that their responses might be based on a more complete review of the Web site. The "START SURVEY" icon exists in its own

survey class is used for a number of different surveys, the generic class configuring itself for any particular survey by retrieving the respective question set from the survey database. With this latter implementation, the survey class name will be the same for all surveys sharing the generic survey class.

"Survey Job Code" - this is the key to retrieving the correct survey configuration for a particular survey. It is passed to the client side component 16 of the data collection tool as a parameter from the trigger.

"Question Image (banner)" - this is an image that is displayed at the top of each question frame and may, for example, contain the name or other identifying symbol of the research commissioner.

"Start Image (logo)" - this is an image that appears with the "START SURVEY" icon.

"Question Color" - in the exemplary implementation, as will be explained further below, the visitor is presented the survey questions in a question frame which contains two panels: (i) a question panel in which the question text is displayed; and (ii) a response panel in which the visitor makes their response. The "Question Color" parameter determines the background color of the question panel.

"Response Color" - this parameter determines the background color of the response panel in the question frame.

"Frequency" - this is the value f , which determines the probability that a user will be presented with an invitation.

"Blocked IP" - this is a string containing a comma separated list of IP network addresses for which the applet is to be blocked, i.e. addresses at which the survey will not be presented to visitors.

"Invitation Text" - this final element of the configuration data contains text that appears in an invitation window, inviting the visitor to take the survey.

The second server side component of the data collection tool is a data grabber servlet

22. This servlet accepts the survey data from the client side component 16 and updates the survey database 6, which is preferably a relational database, with this data. More specifically, the client side component 16 sends the survey data to the survey server 14 over the Internet 2 as survey data post requests. The data is posted in name-value pair format. The data grabber servlet 22 accepts the HTTP request, extracts the survey data and posts it to the survey database 6 using, in the currently preferred embodiment, the JDBC API (a standard feature of JDK1.1).

Third, there is a question servlet 24 which accepts question text requests from the client side component 16, extracts the appropriate question text from the survey database 6 and returns the question text to the client side component 16. The question data is returned to the client side component 16 in string format via an HTTP response. The client side component 16 parses the string formatted data and uses it to initialize Java question objects. The question text itself is designed with a view to the particular survey being undertaken. The currently envisaged application for which the exemplary system according to the invention is designed is the gathering of customer feedback regarding the quality of services, information, and products that are being provided by an organization doing business on the World Wide Web. Suitable standard, core questions for this application are given in Appendix I, although in any particular case it may be desirable to add further, custom questions, or to modify some of the standard questions to provide the desired focus for the market research being undertaken.

As an alternative to returning the question data in string format, it may be returned using object serialization if the programming environment allows, for example if the survey applet is running under JDK1.1. Object serialization allows an object instance to be encoded

transaction, whereas the known HTML implemented survey tools would require either a transaction after each question response or putting all questions on a single form. In the first case the user may experience frustrating delays between document downloads which would tend to increase the survey drop out rate, thereby jeopardizing the confidence intervals and/or statistical validity of the survey results. The latter case would require HTML and server side CGI code, which would be very difficult to maintain. In either of these HTML implementations, the user can easily go back to change previous responses. The ability of the present invention to control these aspects of behavior on the part of the survey tool and the actual survey respondent helps to ensure the validity of the methodology and the integrity of the data collected. This is an important methodological improvement offered by the present invention over other known survey tools.

A further advantage is that since the server applet 16 runs in a separate window, it can be minimized allowing the user to explore the Web site 4 they are visiting before starting the survey. This may increase the likelihood of a more informed evaluation of the site by the visitor. The use of the Java applet also provides a more versatile and robust user interface, for example it is not affected by connectivity problems once up and running, and offers a superior development environment that results in both source code that is easier to debug, maintain, and modify incrementally, and research results that are methodologically more reliable than in other known on-line survey tools.

The structure of the survey servlet 16 will now be discussed in greater detail, with reference to FIGURE 2, which is an object diagram for a preferred implementation of the survey servlet.

The APPLET LOADER 30 is the component initially downloaded from the survey server 14 by the visitor's browser 18 when the visitor requests the trigger page 12, containing the trigger, from the information server 4. Its functions are to download from the survey server the necessary Java classes, to present the invitation to take the survey to the visitor, and

into a byte stream, which can then be written to a file or network socket. The byte stream can be subsequently read from the file, or the other end of the network socket, and used to instantiate another copy of the original object. With this object serialization approach it becomes possible to simplify both the question servlet 24 and the client side component 16 because they are no longer required to convert question data to and from string format.

The final server side component of the data collection tool is a counter servlet 26 which accepts data packages from the client side component 16 containing survey progress data, that is data indicating the progress of the survey, rather than data representing the survey answers themselves. It is envisaged that this data could be used to detect when a visitor reaches particular milestones in the completion of the survey, and would enable analysis of the actions of visitors who start the survey but drop out prior to completion.

The survey server 14 also holds a copy of the client side component 16 of the data collection tool, which is deployed to, and executed within the visitor's Web browser 18. In this exemplary embodiment, the client side component 16 is implemented as an applet written in the Java language and will be referred to as the survey applet 16. It provides the interface with the visitor through which the survey data is collected. More particularly, the survey applet 16, once downloaded and executed within the visitor's browser 18, presents the visitor with a series of questions, one at a time, in a window separate from the browser 18. The visitor responds to each question in turn and once they have committed a response, the applet 16 does not allow the response to be changed. The applet 16 initially records each response on the client side, and then when all of the survey questions have been answered, the responses (i.e. survey data) are posted to the survey server 14.

This approach has a number of advantages over prior survey techniques. Firstly, the ability to prevent answers being changed once made is generally desirable, and using a Java applet, or an equivalent applet, enables this to be achieved whilst keeping the number of transactions with the survey server 14 to a minimum. Thus the survey applet 16 collects all user responses, question by question, and posts them to the survey server 14 in a single

to instantiate the CLIENT SPECIFIC SURVEY 32 and call the *doSurvey()* method, when the INVITER 34 indicates a positive answer by a visitor to the invitation.

CLIENT SPECIFIC SURVEY 32, for which the WEBMETRICS class 36 is a superclass, overrides the *doSurvey()* method, and instantiates the QUESTION FRAME 38, the concrete QUESTION objects 40 and CGI POST 42. In addition it passes, in turn, a reference to each QUESTION object 40 to the QUESTION FRAME *show()* method, to cause each question of the survey to be presented in turn. If desired, the survey may be configured so that the presentation of certain QUESTION objects 40 is dependent on an answer to a previous question. For example, one might only wish to ask the visitor what industry sector they work in if they have already indicated that they were visiting the information site of the research commissioner for business purposes. Skip logic such as this, and other similar question controls are not available in conventional HTML survey tools.

As each question is answered, CLIENT SPECIFIC SURVEY 32 calls the *getResponse()* method of QUESTION 40 and the *addPostValue()* method of CGI POST 42 to retrieve the visitor's response to the question and update CGI POST 42 with the response. Finally, once all of the survey questions have been answered, CLIENT SPECIFIC SURVEY 32 calls the CGI POST *post()* method to return the answers to the survey server 14.

QUESTION FRAME 38 contains QUESTION 40, and displays QUESTION 40 when its *show()* method is called by CLIENT SPECIFIC SURVEY 32. QUESTION FRAME 38 also handles action events from NEXT BUTTON 44, which accepts the visitor's indication that they have answered the current question. A NEXT BUTTON event handler within QUESTION FRAME 38 calls the *storeResponse()* method of QUESTION 40 and updates PROGRESS METER 46 as each question is answered. If the visitor attempts to move on to the next question without having completed the answer to the current question, the NEXT BUTTON handler causes an appropriate error message to be displayed to the visitor, or takes other corrective action if the survey methodology so indicates.

QUESTION 40 contains a QUESTION PANEL 48 in which the question text is presented to the visitor, and a RESPONSE PANEL 50, which presents question response choices to the visitor and interacts with the visitor to capture their responses. When its *storeResponse()* method is called by QUESTION FRAME 38, QUESTION 40 interprets the state of the RESPONSE PANEL 50 to capture the visitor's response, and stores the captured response as a string value. The question response choices themselves can take any one of a number of different forms. Examples include: a list of mutually exclusive response options, presented for instance as option buttons or a single selection list box; a list of non-exclusive response options of which the visitor can select one or more, presented, for instance, as check boxes or a multiple selection list box; one or more sliders or the like which allow a response to be given on a continuous scale, used, for instance, to respond to a question requesting an indication of the importance and/or performance of a particular feature; and one or more text fields allowing free hand entry of responses by the visitor, used, for instance, when a question asks for the visitor's comments, or to elicit contact details from the visitor. Specific examples of these various response choice types are illustrated in FIGURES 8 to 13, which are discussed below.

Finally, CGI POST 42 functions to send the captured responses in name-value pair format to the data grabber servlet 22 of the survey server 14 from its *post()* method.

As already discussed above, the data collection process is initiated when the visitor requests a trigger page 12 on a Web site 4 associated with an enabled survey, as they would request a page on any other Web site. The trigger page 12 can be any ordinary HTML page on the Web site 4, additionally containing the survey trigger. In the preferred implementation, this survey trigger is an applet tag, which the web master can simply insert into the HTML source for one or more of their web pages. An exemplary applet tag is shown below:

```
<applet width=5 height=5
code="iworks.jv102.WebMetrics.AppletLoader.class"
codebase="http://demo.informationworks.net/wmdemo/classes">
```

- 7) The applicable survey configuration is returned to the survey applet 16 by the survey server 14.
- 8) The applet 16 executes a validation sequence to determine whether or not to present the visitor 52 with an invitation to take the survey. It checks whether or not it is supported under the visitor's browser 18, whether it has been previously executed in the current browser session, and whether or not the visitor's IP address has been blocked. If all those tests pass, the survey applet 16 finally determines whether or not to present a survey invitation to the visitor based on the configured invitation frequency, *f*, which is downloaded as part of the survey configuration in step 7. The value of *f* is an integer that determines the probability that the visitor 52 will be presented with an invitation — the greater the value of *f*, the lower the probability. If *f* is equal to 1, then every visitor whose browser and IP address pass the initial validation will be presented with an invitation. If the validation sequence fails, the applet quietly exits.
- 9) If the validation succeeds, the visitor 52 is presented with an invitation 60 to take the survey (see FIGURE 4). The survey applet 16 posts the fact that an invitation 60 was presented to the survey server 14 (step 9a). The invitation 60 may or may not offer an incentive for the visitor to take the survey. It allows the visitor to respond yes or no by clicking the appropriate button 62, 64.
- 10) The visitor responds yes or no. If the response is no, the survey applet quietly exits.
- 11) If the visitor's response to the invitation is yes, the survey applet requests the Java classes required to complete the survey from the survey server 14.
- 12) The requested classes are downloaded to the survey applet 16 from the survey server 14. The visitor 52 is presented with a status window for the normally brief duration of the download. Delaying downloads of some of the classes up until this point reduces the time taken to initially download the survey applet 16.

```
<param name="name" value="demo">
```

```
</applet>
```

Advantageously, this applet tag, or one like it, can be small (for example only 5 by 5 pixels) and colored to match the Web page 12 it resides on, thus avoiding any disruption of the appearance of the page.

To give a better understanding of the data exchange between the various components of the system, and the visitor's interaction with the system, a step wise example of the process of data collection using the inventive system will now be described with reference to FIGURE 3, which illustrates the complete process, and FIGURES 4 to 17 which show screen shots taken during the process. The numbered steps described below correspond to the numbered arrows in FIGURE 3.

- 1) The visitor 52, accessing an information web site ("customer Web site") 4 via a Web browser 18, requests the trigger page 12 from the Web site 4 (typically the Web site of the research commissioner).
- 2) The Web site 4 returns the requested trigger page 12 which contains an applet tag similar to the example given above.
- 3) The codebase parameter for the applet tag on the trigger page 12 directs the visitor's browser 18 to request the survey applet ("WebMetrics applet") 16 from the survey server ("WebMetrics server") 14.
- 4) The survey applet 16 is returned to the browser 18 by the survey server 14 along with related Java classes.
- 5) The visitor's browser 18 executes the survey applet 16, which runs within the browser 18.
- 6) The survey applet 18 requests survey configuration information from the survey server 14. The configuration information is requested on the basis of the unique survey codebase included in the applet tag.

- 13) The survey questions are requested from the survey server 14 by the survey applet 16.
- 14) The survey server 14 returns the survey questions to the survey applet 16. The visitor 52 is presented with a status window for the normally brief duration of this download. Delaying question download up until this point reduces the initial download time of the survey applet 16.
- 15) The visitor 52 is presented with survey instructions 66 (see FIGURE 5) followed by a start survey icon 68 (see FIGURE 6). The visitor is instructed and encouraged to continue with their visit to the information web site 4 before continuing with the survey.
- 16) The visitor 52 explores the information web site 4. The start survey icon 58 meanwhile exists as a separate window on the visitor's desktop. As such, it may be minimized or lowered while the visitor interacts with the browser (see FIGURE 7), and effectively "floats" with them as they browse.
- 17) The visitor 52 clicks the start survey icon 58 when ready to begin the survey.
- 18) The visitor 52 is presented with the question frame, also in a window separate from the browser 18. The question frame 70 presents the user with one question at a time, examples of which are seen in FIGURES 8 to 13. Each question frame displays a banner 72, in which the name of the research commissioner can be displayed for example, a question panel 74, in which the question text is displayed, and a response panel 76 in which the response options are given where applicable and in which the visitor enters their response. In addition, the question frame 70 displays a progress bar 78 indicating the visitor's progress through the survey, and a "NEXT" button 80 which the visitor clicks, having made a response, to move on to the next question. Various formats of question response may be used, as illustrated by FIGURES 8 to 13. FIGURE 8 shows a list of mutually exclusive possible responses alongside respective option buttons 82 that the visitor can click

on to make their selection of response. In FIGURE 9 the response panel displays a free format text box 84 in which the visitor is invited to type comments. FIGURE 10 illustrates a response panel with two sliders 86, 88 that can be dragged by the visitor to their choice of response on the sliding scales shown. In FIGURE 11, the visitor enters their response by clicking on the desired response in a scrollable, single choice list box 90. FIGURE 12 shows an example of a checkbox list 92, in which the user has the option to select more than one response. Additionally, the response panel seen in FIGURE 12 includes a text box 94 adjacent the "Other Internet technology" option, to enter what "other" technology they have. FIGURE 13 shows a further example of a response panel including text boxes 96, here to elicit contact details from the visitor 52.

19) The visitor enters a response to each question in turn and after responding clicks the "NEXT" button 80 to move to the next question. The response is stored locally, for example in the memory or other storage device associated with the device on which the visitor's browser is running, and the question frame 70 presents the next question and awaits an answer. This question and answer procedure continues until the last question is answered. Step 19a shows mid-point progress updates being posted to the survey server 14. If at any time the visitor clicks the "NEXT" button 80 without having completed a response, they are presented with an appropriate error message. For example, they might be told they have not entered a response at all (see FIGURE 14), or that an element of a multi-part response (see FIGURE 15). In a similar way, in the case of the multi-part "Importance / Performance" response illustrated in FIGURE 10, the visitor is also prompted to enter "Importance" before entering "Performance" if they attempt to move the "Performance" slider without having moved the "Importance" slider first (see FIGURE 16).

A representative session at the report site 8 is now described with reference to FIGURES 18 to 28. When a designated user accesses the report site 8, they are first presented with a login page 112 (FIGURE 18). Each designated person is given a user name and password with which to login, and on entering these in the respective boxes 114, 116 on the login page and clicking the "Start" button 118 the designated person is presented with a drop down menu 120 (FIGURE 19) of all active or recently completed surveys that are accessible to them (this may be a subset of the complete set of active surveys, some only being accessible by other designated users). The designated person selects the survey for which they wish to see the results and they are then presented with a contents page (FIGURE 20) that allows them to select one of several reports, namely "Executive Summary", "Counts and Frequencies", "Verbatims" or "Crosstabs", or alternatively they can select to export data from the database, for example for use with a local spreadsheet or database program.

By clicking on the first menu item, "Executive Summary" 122, the designated person is taken to an Executive Summary contents page (FIGURE 21), where they are presented with the choice of three report types, "Overall", "Site Performance", and "Demographics", the designated person clicking on the respective button 124, 126, 128 to be taken to the report of their choice. As seen in FIGURES 22A and 22B, which respectively show top and bottom halves of the relevant report site page, the "Overall" report gives three general indicators of satisfaction of the visitors to the site: overall satisfaction with the site; likelihood of revisiting the site; and likelihood of recommending the site to a friend or colleague. In each case, as with all of the other reports described below, the results represent an up to date view of visitors responses to the survey. The "Overall" report also provides a link to specific question answers in the "Verbatims" report (described below) by clicking on the "poor evaluation verbatims" button 130. Specifically, this links to the free text answers of the visitors who have rated their overall satisfaction as "very dissatisfied" or "somewhat dissatisfied", and who have taken the opportunity to comment more fully on their reasons for this poor rating. A further feature of the "Overall" report is that it provides the opportunity to view the results by

20) After the last question is answered, the visitor is presented with a "Thank you" 98 in the question panel 74, and a "NEXT" button 80a to end the survey (see FIGURE 17). When the user clicks the "NEXT" button 80a, the survey servlet 16 posts all of the question responses to the survey server 14 where they are used to update the survey database 6. The survey server 14 then exits, leaving the visitor 52 to continue browsing if they wish. If, however, they return to the trigger page 12, they will not be presented with a further survey, because they will fail the validation step (step 9 above). After the last question is answered, the counter servlet 26 also makes/updates a record of the following attributes (referred to as sample incidence information): number of hits to the trigger applet tag; number of qualified hits (by browser type), i.e. those which pass the initial validation step; number of invitations produced; number of invitations accepted; and number of surveys offered that were completed. This combination of features is comparable to the type of sample incidence tracking used to validate traditional market research efforts, and is one unique advantage offered by the invention over other known on-line research methods.

Having explained the process by which survey information is collected, the report site 8 and its interaction with the survey database 6 to present the designated person with the desired reports will now be discussed. As already mentioned above, the report site 8 allows designated persons, typically the research commissioner to review the results of an on-going, or recently completed survey via a web browser 110 (FIGURE 1). In this way, remote access to the real time results is possible from anywhere with Internet access. In the preferred implementation described, the report site 8 is implemented entirely in the Practical Extraction and Report Language (PERL) and relies on CGI. It retrieves data from the relational database 6 and formats it to present the visitor with meaningful reports. Using PERL, the report site effectively encompasses a report tool 10, because it is able to manipulate the survey results stored in the database 6 to present the desired format and focus of the report.

pre-defined cuts or demographic segment (gender, age, income, Internet experience, frequency of visitation to site). To switch the report format to view the results by a particular demographic segment, the designated person simply clicks on the respective button 132 at the foot of the report (see FIGURE 22B). FIGURES 23A and 23B respectively show extracts from the top and bottom halves of an example of one such demographic segment report based on income.

The second report type available from the Executive Summary contents page (FIGURE 21) is "Site Performance". Clicking on the respective button 126 takes the designated person to the report seen in FIGURES 24A and 24B. This report displays the visitors' "importance" and "performance" ratings for seven key basic elements relevant to most, if not all Web sites.

The final report accessible from the Executive Summary contents page is the "Demographics" report. This is a full report of the demographic indicators of the visitors who responded to the survey, including indicators such as job occupation, frequency of Internet usage, age and income. Each indicator is rated as a percentage of total responses. This report is seen in its entirety in FIGURES 25A through D.

Returning to the main contents page (FIGURE 20), the second option is "Counts and frequencies". Clicking on this button 134 takes the designated person to a report giving a question-by-question display of answers to all questions in the survey, with the exception of free text answers. The answers are displayed in an appropriate graphical form, for example where the question gave the option of a limited choice of answers, the percentage of each answer chosen as a percentage of total answers to the question is displayed as a bar graph. FIGURE 26 shows an extract from the "Counts and frequencies" report.

The next report type available on the main contents page is the "Verbatim" report 136. As discussed above, in response to some questions in the survey, the visitor is given the opportunity to give a free text, open-ended response. The answers to these questions are

stored verbatim in the survey database, and are accessible through the "Verbatim" report, question by question.

The final report option on the main contents page is the "Crosstabs" report 138. This report provides the designated person with a real-time interactive tool, which gives them the opportunity to select specific questions to generate a crosstab. The designated person first selects the "banner" from a scrollable list 140 (see FIGURE 27), which may be any one of the non-free text survey questions, and then selects the "stub", which can be any other one of the non-free text questions from the survey. The "stub" answers are then displayed crosstabbed with the "banner" answers, in both table 142 and bar graph 144 form with appropriate statistical notations where applicable (e.g. mean, median, standard deviation and/or standard error), as seen in FIGURES 28A and 28B respectively.

Thus, as illustrated by the above, the report site provides a very versatile, interactive tool for reviewing the survey results. Furthermore, since the results are updated with the data from each newly completed survey, the report site provides real time feed back on the performance of the Web site.

The report site, or an alternative site accessible via the Internet, may also provide access to a survey editor facility. The fundamental component of this facility is essentially a data entry tool via which the question data and/or survey configuration data in the survey database can be entered and/or amended. Consequently, this facility enables, through means known to those of ordinary skill, the designated person(s) to edit an existing survey, or even create their own survey, for use with the data collection tool disclosed herein.

In more detail, the survey editor is a front-end component that enables the entry and modification of question content and survey configuration. Using this front-end component, a user may enter the following information for each question contained in a survey: question text; question type (for example, single response, multiple response, or open ended); response text; response dependencies; and order of appearance within the survey. The user can also

of the invention which, in the implementation described here, does not use any of the resources of the information server, only those of the client and the survey server.

While the preferred embodiment of the invention has been illustrated and described, it will be appreciated that various changes can be made therein without departing from the spirit and scope of the invention. For instance, whilst the system has been described consistently as including modules both for collecting data and for reporting the collected data, each of these modules may have independent utility in appropriate circumstances. For example, the data collection tool may be used as the front end to data reporting tools other than the inventive one described herein. Likewise, the inventive data reporting tool and report site described herein may be used in conjunction with a database that is populated with data elicited using a data collection tool other than the inventive tool described herein.

APPENDIX I

Exemplary Core Survey Questions

The following sets forth a set of exemplary survey questions suitable for gathering customer feedback regarding the quality of services and information that are being provided by an organization doing business on the World Wide Web. Some of the questions are only to be asked if a particular response was made to a preceding question. This is indicated with a Boolean statement at the beginning of the question. See for example questions 11 and 12, which are only to be asked if the person taking the survey has selected the first or the third response option to question 10.

q1. Prior to beginning this survey, about how long did you spend exploring this site?

enter or modify survey specific configuration data such as question and response color, banner and start-up images, invitation frequency, and IP address blocking.

Adopting a survey editor such as this will allow someone without skills in the relevant computer programming fields to create and modify questionnaires/surveys. In this way, the commissioner of the research or other data collection procedure will be able to create their own surveys using this tool.

The system described above can be implemented on conventional Internet compatible hardware. The server side components of the data collection tool reside on a survey server or servers connected to the Internet. The survey database, the report site and the report tool all reside on a report server or servers connected to the Internet. Although in FIGURE 1 the survey server and report server are illustrated as being separate servers and may be resident on separate physical platforms, it is also feasible for a single physical platform and /or server to perform both functions.

Particularly when using a single physical platform, the currently preferred server configuration is a Sun SPARC hardware platform, running a Solaris 2.x operating system, but other hardware/OS platforms can be used, so long as they meet with the primary requirements of offering support for: a robust RDBMS (such as those mentioned below); JDK 1.x, a web server that supports the Java servlet API, and PERL, or equivalent platforms. JavaWebServer 1.x is the currently preferred web server, although any web server that supports the Java servlet API could be used. The survey database is preferably an RDBMS such as Sybase 11, Oracle, Informix or Progress.

The client to and on which the data collection tool is deployed will typically be a Java supporting Web browser such as Microsoft Internet Explorer or Netscape Navigator running in a Windows environment, although the invention is also applicable to other browsers and/or operating systems. The performance requirements for the information server are dependent on the characteristics of the information site itself, rather than the characteristics of the system

- 1 ☐ Less than a minute.
- 2 ☐ One to three minutes.
- 3 ☐ Four to ten minutes.
- 4 ☐ Over ten minutes.
- 99 ☐ Not sure.

q2. In your own words, please describe your purpose for visiting this site.

IMPORTANCE/PERFORMANCE

In the following questions we will present you with attributes that describe various characteristics of a web site.

q3. First, please indicate how *important* each of these elements are to you when you are online.

q4. Then, we'd like to know your opinion as to how well (JOB DESCRIPTION) performed on each of these criteria.. **RANDOMIZE ORDER.**

_01 The site's organization makes information easy to find.

Not important	No preference	Very important
1 2 3 4 5 6 7		
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

Not easy at all	Very easy	DK
1 2 3 4 5 6 7 99		
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

_02 The site contains valuable links.

Not important	No preference	Very important
1 2 3 4 5 6 7		
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

No valuable links	Very valuable links	DK
1 2 3 4 5 6 7 99		
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

_03 The site contains valuable supplementary or educational resources.

Not important	No preference	Very important
1 2 3 4 5 6 7		
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

Resources not valuable at all	Resources very valuable	DK
1 2 3 4 5 6 7 99		
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

_04 The latest, most current information is available.

Not important	No preference	Very important
1 2 3 4 5 6 7		
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

Not current at all	Very up-to-date	DK
1 2 3 4 5 6 7 99		
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

q7. How likely are you to visit this site again?

- 1 ☐ Very likely to visit
2 ☐ Somewhat likely to visit
3 ☐ Neither likely nor unlikely to visit
4 ☐ Somewhat unlikely to visit
5 ☐ Very unlikely to visit

q8. How likely are you to recommend that a friend or colleague visit this site?

- 1 ☐ Very likely to recommend
2 ☐ Somewhat likely to recommend
3 ☐ Neither likely nor unlikely to recommend
4 ☐ Somewhat unlikely to recommend
5 ☐ Very unlikely to recommend

q9. What can we add to make this site more useful to you?

DEMOGRAPHICS

q10. Are you visiting this Web site for business or recreation?

- 1 ☐ Business
2 ☐ Recreation
3 ☐ Both business and recreation

_05 The site loads quickly.

Not important	No preference	Very important
1 2 3 4 5 6 7		
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

Loads very slowly	Loads very fast	DK
1 2 3 4 5 6 7 99		
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

_06 The site looks attractive.

Not important	No preference	Very important
1 2 3 4 5 6 7		
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

Not attractive	Very attractive	DK
1 2 3 4 5 6 7 99		
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

_07 The site is easy to navigate.

Not important	No preference	Very important
1 2 3 4 5 6 7		
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

Not easy at all	Very easy	DK
1 2 3 4 5 6 7 99		
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

q5. Considering all factors, how satisfied are you with this site?

- 1 ☐ Very satisfied
2 ☐ Somewhat satisfies
3 ☐ Neutral
4 ☐ Somewhat dissatisfied
5 ☐ Very dissatisfied

q6. IF q5=Somewhat or Very dissatisfied: Please tell us why you give this Web site a poor rating.

q11. IF q10="1" OR "3": Which one of the following best describes your industry?

<input type="radio"/>	—
<input type="radio"/>	Agriculture and Forestry
<input type="radio"/>	Utilities
<input type="radio"/>	Construction
<input type="radio"/>	Manufacturing
<input type="radio"/>	Computer and electronics manufacturing
<input type="radio"/>	Software manufacturing
<input type="radio"/>	Retail and wholesale trade
<input type="radio"/>	Investment and insurance services
<input type="radio"/>	Legal, a/c & architectural services
<input type="radio"/>	Education
<input type="radio"/>	Medical
<input type="radio"/>	Arts and entertainment
<input type="radio"/>	Hotels and restaurants
<input type="radio"/>	Government
<input type="radio"/>	Other

q12. IF q10="1" OR "3": Which department do you work in?

	Finance/accounting
	Marketing
	Administration
	IT
	Operations
	Legal
	Engineering
	Manufacturing/production
	HR
	Sales
	Purchasing
	Small business (no depts)
	Sole proprietor/owner
	Other

q13. How did you most recently get to (JOB DESCRIPTION)?

- 1 ☐ Search engine
 2 ☐ Bookmark
 3 ☐ Destination site
 4 ☐ Linked from another site

q14. IF q13 SEARCH ENGINE: Which search engine did you link from?

- 1 ☐ Infoseek
 2 ☐ Lycos
 3 ☐ HotBot
 4 ☐ Yahoo
 5 ☐ Excite
 6 ☐ Alta Vista
 7 ☐ Web Crawler
 98 ☐ Other

q15. IF q13 LINKED FROM ANOTHER SITE: What site did you link from?

q16. How frequently do you access the Internet?

- 1 ☐ Hourly
 2 ☐ Daily
 3 ☐ A few times a week
 4 ☐ A few times a month
 5 ☐ Less frequently

q17. Have you ever purchased anything over the Internet?

- 1 ☐ Yes
 2 ☐ No

q18. How would you evaluate your level of expertise regarding the Internet?

- 1 ☐ Novice user (new to the Internet)
 2 ☐ Intermediate user (frequent browser, use plug-ins)
 3 ☐ Expert user (programmer, heavy user)

q19. How often have you visited (JOB DESCRIPTION) before today?

- 1 ☐ Frequently (more than ten times)
 2 ☐ Once in a while (fewer than ten times)
 3 ☐ Never before

q20. Please tell me at what speed you are connecting to the Internet.

- 1 ☐ 14.4
 2 ☐ 28.8
 3 ☐ 33.6
 4 ☐ 56.6
 5 ☐ ISDN
 6 ☐ T-1
 7 ☐ T-3
 98 ☐ Other, SPECIFY:
 99 ☐ Don't know

q21. Please indicate which of the following Internet technologies you have on your computer.

- 1 ☐ Progressive Networks RealAudio, RealPlayer, or RealVideo
 2 ☐ Shockwave
 3 ☐ An Internet phone
 4 ☐ VRML plug-in
 5 ☐ Microsoft Internet Explorer 3.0 or later
 6 ☐ Netscape Navigator 3.0 or later
 7 ☐ Microsoft NetMeeting
 98 ☐ Other Internet technology:
 8 ☐ None
 9 ☐ Don't know

q22. Are you single or married?

- 1 ☐ Single
 2 ☐ Married

q23. How many children under the age of 18 live in your household?

- 1 ☐ One
 2 ☐ Two
 3 ☐ Three
 4 ☐ Four or more
 5 ☐ None

q24. Are you male or female?

- 1 ☐ Male
 2 ☐ Female

q25. What is your age?

	Under 18
	18-24
	25-34
	35-44
	45-54
	55-64
	65 and over

q26. Please indicate the highest level of education you've completed.

- 1 ☐ Less than high school graduate
 2 ☐ High school graduate
 3 ☐ One or two years of college
 4 ☐ College graduate
 5 ☐ Graduate school/advanced degree

q27. Which of the following represents your total household income?

	Under \$10,000
	\$10,000 to \$24,999
	\$25,000 to \$49,999
	\$50,000 to \$74,999
	\$75,000 to \$99,999
	Over \$100,000

Thank you very much! Please complete the following so that we can enter you in the

sweepstakes drawing for . . .

Name:

E-mail Address:

Phone (work):

Phone (home):

Address:

q98 We often complete different types of Internet surveys with respondents like yourself. Research subjects range for studies regarding computer usage, to Internet habits, to gathering feedback on new product ideas. Please check here if you'd be willing to have us contact you for other research.

- 1 ☐ Yes, contact me again.
2 ☐ No, don't contact me again.

q99 Overall, how would you rate your experience on this Internet survey compared to other surveys you may have taken in the past.

- 1 ☐ Much better experience.
2 ☐ About the same as others.
3 ☐ Much worse experience.

Claims

1. A computer network based method for collecting and reporting user data to a client, the method comprising:
5 deploying a data collection tool to a client on the computer network;
eliciting data from a user accessing the computer network through the client;
storing the elicited data in a research database; and
providing access to the elicited data to the client.
10 2. The method recited in claim 1, wherein deploying a data collection tool is initiated by a user visiting a predetermined trigger page.
3. The method recited in claim 2, wherein predetermined trigger page is one of a plurality of predetermined trigger pages.
15 4. The method recited in claim 3, wherein deploying a data collection tool further comprises:
detecting the deploying of the data collection tool; and
controlling the deploying as a function of the results of the detecting.
20 5. The method recited in claim 1, wherein deploying a data collection tool further comprises controlling the deploying as a function of the status of one or more test conditions.
6. The method recited in claim 5, wherein test conditions comprise at least one of a response to an invitation to respond to a survey, the quantity of responses to the survey relative to a predetermined frequency control function, and the identity of the user.
25 7. The method recited in claim 1, wherein storing the elicited data in the research database further comprises updating the research database.
30

8. The method recited in claim 1, further comprising:
extracting one or more report results from the research database; and
wherein providing access to the client further comprises presenting one or more of the report results to the client.

9. The method recited in claim 8, wherein extracting one or more report results from the research database further comprises forming one or more reports.

10. The method recited in claim 8, wherein presenting one or more of the report results to the client further comprises providing access to one or more of the report results in an interactive query format.

11. The method recited in claim 1, wherein:
storing is performed upon an ending of each the eliciting data; and
15 providing access to elicited data further comprises posting the elicited data to a server and providing access to the server to the client.

12. A computer network based method implemented on the Internet for collecting and reporting user data to a client over the Internet, the method comprising:
20 presenting an invitation to the user to take an on-line survey;
executing the on-line survey as a function of the user's response to the invitation, executing the on-line survey comprising sequentially presenting a plurality of questions;
storing the user's response to each question;
posting all the responses to a survey server for updating a survey database after all the
25 questions are presented;
providing access to all responses to the client upon completion of each instance of updating of the survey database.

13. The method recited in claim 12, wherein presenting an invitation to take an on-line survey further comprises validating the user.

14. The method recited in claim 13, wherein validating comprises determining one or more of the ability of the user's browser to support the survey, prior execution of the survey during the instant browser session, and a block of the user's internet protocol address.

15. The method recited in claim 14, wherein validating further comprises determining the status of a frequency control function.

16. The method recited in claim 15, wherein presenting an invitation to the user to take an on-line survey further comprises presenting a trigger page to a user upon request by the user, the trigger page including a hyperlink to a survey applet.

17. The method recited in claim 16, further comprising updating a database of one or more predetermined incidence information data; and
15 wherein providing access to all responses to the client further comprises providing access to database of incidence information.

18. The method recited in claim 17, wherein incidence information data comprises one or more of a quantity of users accessing the hyperlink, a quantity of the users satisfying the validating; a quantity of invitations presented, a quantity of invitations accepted, and a quantity of surveys completed.

19. The method recited in claim 12, wherein presenting an invitation to take an on-line survey further comprises storing an indication that the presenting an invitation to take an on-line survey was performed.

20. The method recited in claim 12, wherein executing the on-line survey further comprises presenting one or more predetermined questions as a function of the user's response to a first presented one or more of the questions.

21. The method recited in claim 12, wherein posting all responses to a survey server occurs in a single transaction.

22. A user data collecting and reporting system implemented on the Internet the system comprising:

a data collection tool for presenting a survey to a user and collecting the user's responses in the form of survey data;

a trigger coupled to data collection tool for initiating the survey;

a survey database coupled to the data collection tool for storing the survey data;

10 a report site coupled to the survey database for accessing the survey data; and

a report tool coupled to the data collection tool for detecting the end of the collecting and coupled to the report site for presenting the survey data after detecting the end.

23. The system recited in claim 22, wherein the report site further comprises a front end coupled to the survey database and the report tool for extracting and formatting one or more of the survey data.

24. The system recited in claim 22, further comprising an information site, the trigger resident on the information site.

25. The system recited in claim 22, wherein the data collection tool comprises a server side and a client side communicating with the server side via the Internet.

26. The system recited in claim 25, wherein the server side comprises:

a survey servlet for extracting data defining a configuration of the survey from the survey database;

a data grabber servlet for accepting a request for one or more of the survey data, extracting the one or more survey data, and posting the one or more survey data to the survey database; and

posting the one or more extracted survey data to the survey database in single transaction.

34. The method recited in claim 33, wherein presenting the survey to a visitor further comprises executing the survey on the visitor's web browser, whereby interface with the visitor is provided for collecting the survey data.

35. The method recited in claim 33, wherein the survey configuration data is a subset of a plurality of configuration data defining a plurality of survey configurations, each of the survey configuration including a subset of a plurality of survey questions.

36. The method recited in claim 35, wherein the survey configuration data is determined as a function of a unique descriptive code.

37. The method recited in claim 33, wherein presenting the survey to a visitor further comprises determining which of the questions is presented as a function of the user's response to an earlier presented question.

38. The method recited in claim 33, wherein:

collecting further comprises collecting one or more predetermined incidence information data; and

posting further comprises updating a database of the incidence information.

39. The method recited in claim 33, wherein:

collecting further comprises collecting survey progress data; and

posting further comprises posting the survey progress data to the survey database.

40. A computer network based method implemented on the Internet for reporting collected visitor data to a client in real-time, the method comprising:

a question servlet for accepting question text requests, extracting predetermined question text from the survey database, and returning the question text.

27. The system recited in claim 26, wherein the server side further comprises a counter servlet for accepting survey progress data.

28. The system recited in claim 22, wherein the data collection tool further comprises a survey applet, the survey applet performing a validation function for determining whether to present the survey to the instant user.

29. The system recited in claim 22, wherein the trigger comprises a hyperlink to the data collection tool.

30. The system recited in claim 22, further comprising a survey editor tool for editing the survey.

31. The system recited in claim 22, wherein the survey database, report site, and report tool reside on one or more report servers connected to the Internet.

32. The system recited in claim 22, wherein the survey database, report site, and report tool reside on two or more different servers connected to the Internet.

33. A computer network based method implemented on the Internet for collecting visitor data in real-time, the method comprising:

extracting survey configuration data defining a configuration of a survey from a survey database, the survey including a set of survey questions;

presenting the survey to a visitor;

collecting visitor's responses to all the survey questions in the form of survey data;

extracting one or more of the survey data; and

storing collected data in a research database upon completion of collection of visitor data; and

providing access to the collected data to the client upon completion of each instance of the storing.

41. The method recited in claim 40, further comprising extracting one or more report results from the research database.

42. The method recited in claim 41, wherein providing access to the collected data further comprises providing the report results in an interactive query format.

43. The method recited in claim 41, wherein extracting one or more report results from the research database further comprises storing raw information collected as report results in the database.

44. The method recited in claim 41, wherein extracting one or more report results from the research database further comprises forming one or more reports.

45. The method recited in claim 44, wherein forming one or more reports further comprises analyzing the report results and forming one or more focused reports.

46. The method recited in claim 44, wherein forming one or more reports further comprises manipulating the report results and forming one or more focused reports.

47. The method recited in claim 40, wherein providing access to the collected data is performed as a function of matching one of one or more predetermined access names with a corresponding predetermined password.

48. The method recited in claim 47, wherein providing access to the collected data further comprises determining which one or more of a plurality of report results are accessible as a function of the password.

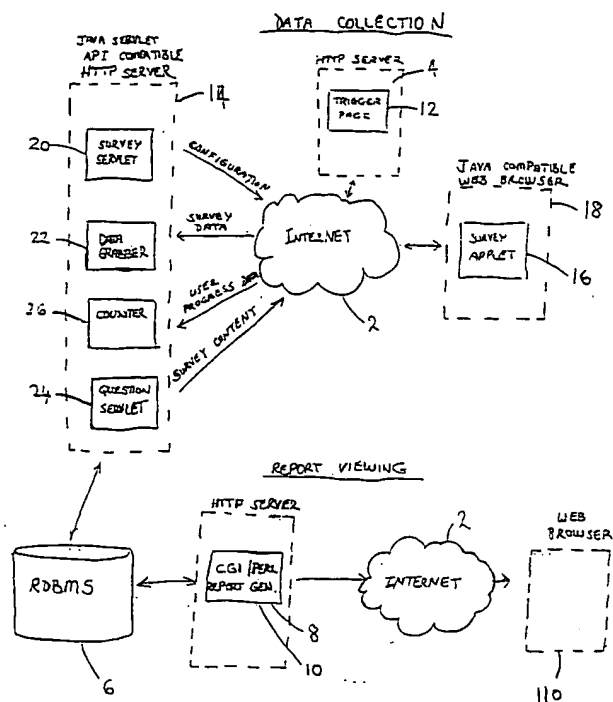


Fig 1

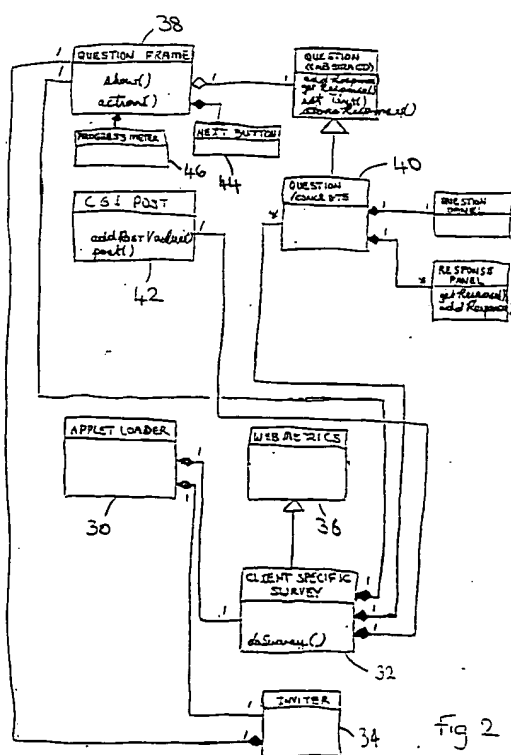


Fig 2

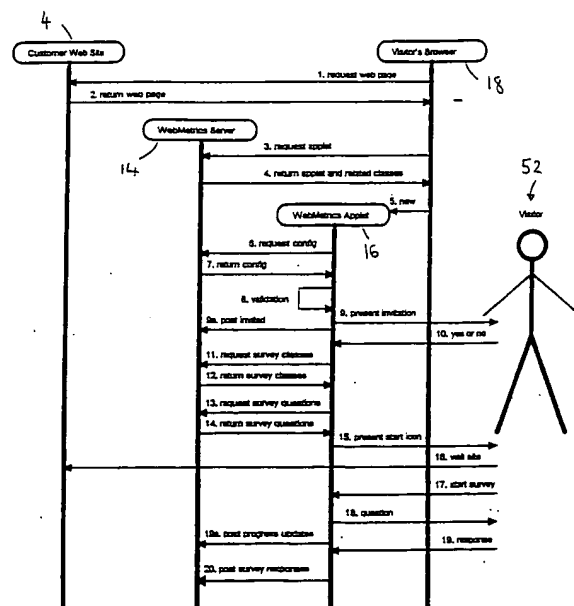


Fig 3

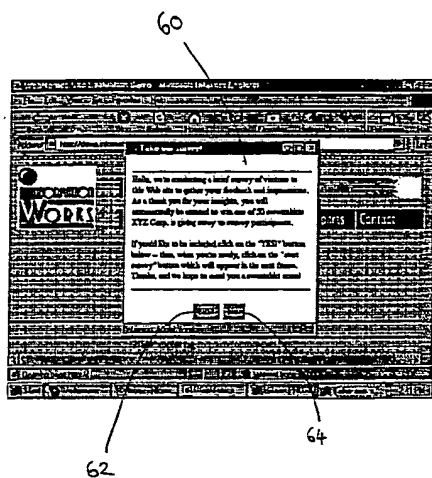


Fig 4

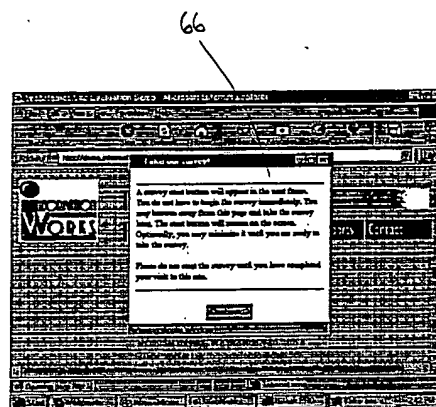


Fig 5

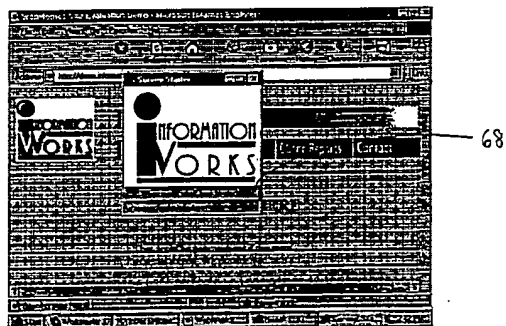


Fig 6

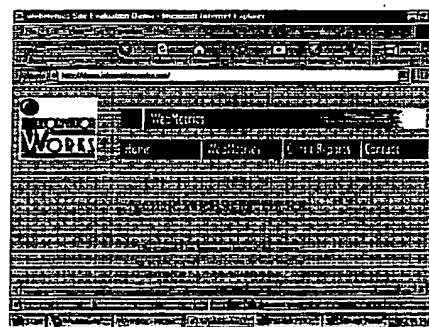


Fig. 7

Survey WebMetrics

How to improve this survey, select how long it took you to complete this site?

82 →

74

76

78

80

NEXT

☐ Less than one minute
☒ One to five minutes
☐ Six to ten minutes
☐ Over ten minutes
☐ Not sure

Fig. 8

Survey WebMetrics

In your own words, please describe your purpose for visiting this site.

84 →

To see the survey only

NEXT

Fig. 9

Survey WebMetrics

Please rate the following factors for importance and then rate how well THIS SITE (continued)

The six country variable sets.

86

88

NEXT

Very important	4	3	2	1	Not important
Key message					
Key product					
Key service					
Key feature					
Key benefit					
Key value					

Fig. 10

Survey WebMetrics

Select one of the following best describes your company?

90

NEXT

Fig. 11

92 →

Flash version

JavaScript version

Java version

Java 2 version

94

Fig. 12

Thank you very much! Please estimate the following on our web-site over 300 in the drawing. All information will be held in strict confidence. You will receive no unsolicited e-mails.

96

Name: David
 Company Name:
 Job Title:
 Address:
 Address:
 City: Illinois
 Country: United States
 E-mail Address:

Fig. 13

[illegible]

Fig. 14

Figure 1 illustrates a WebMetrics browser window with various elements labeled for importance and estimate. The window title is "Home". The main content area says "Please make a comment for WebMetrics." Below this is a "YES" button. The status bar at the bottom shows "http://www.webmetrics.com/". Labels with arrows point to these elements: "Very important" points to the title bar; "Very estimate" points to the status bar; "No preference" points to the "YES" button; "Not important" points to the status bar text; and "Not estimate" points to the status bar text. A scale from 1 to 7 is provided for each label.

Label	Scale (1 to 7)
Very important	1, 2, 3, 4, 5, 6, 7
Very estimate	1, 2, 3, 4, 5, 6, 7
No preference	1, 2, 3, 4, 5, 6, 7
Not important	1, 2, 3, 4, 5, 6, 7
Not estimate	1, 2, 3, 4, 5, 6, 7

Fig. 15

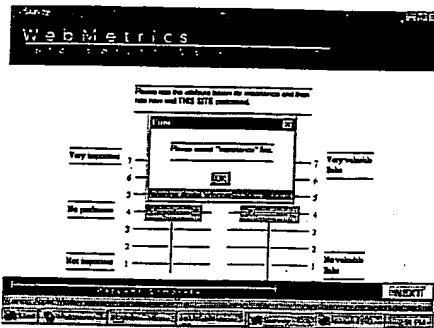


Fig. 16

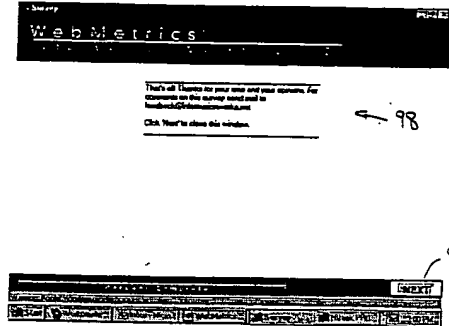


Fig. 17



Welcome!

Enter your login and password in the boxes below. Then click the button at the bottom of the page to validate your password and enter the reporting site.

Note: In order to view your reports, you will always need to enter your login and password via this screen. This means that you will not be able to bookmark any individual reports. However, you may bookmark this page.

Login: 114

Password: 116

112

Fig. 18



Available Jobs

The account: iwlc can access the following job(s) listed below. Please pick the job you are interested in and click the button marked "Start" to view the on-line reports.

9876 1: Information Works: "Information Works Demonstration" 120

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Fig. 19

WebMetrics

Information Works: "Information Works Demonstration" (259 completes)

Table of Contents

Report Type	Example	Report Description
12.2 Executive Summary		Overview of data derived from the evaluation
13.4 Question by Question		Question by question display of research results
13.6 Responses to all open-ended questions		Responses to all open-ended questions
13.8 The opportunity to generate cross-tabs of the data		The opportunity to generate cross-tabs of the data
13.9 Export your data for use with a spreadsheet/database program		Export your data for use with a spreadsheet/database program

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Fig. 20

WebMetrics

Information Works: "Information Works Demonstration" (259 completes)

Executive Summary

Welcome to the WebMetrics™ Executive Summary report. This report provides an overview of data derived from the WebMetrics™ evaluation. The report is organized into the following sections:

Report Type	Example	Report Description
12.4 Overview		Displays data on visitors' overall experience with the Information Works website, their likelihood of revisiting and their likelihood of recommending the site to others.
12.6 Detailed Performance		Provides data on the importance and performance of key site characteristics, pointing out "gaps", or opportunities for improvement. Also provides data indicating variables that are "drivers" of site satisfaction.
12.8 Demographic Segments		A detailed look at who is coming to the Information Works site: age, income, gender, level of Internet expertise, and other descriptors.

Back to Table of Contents

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Fig. 21

WebMetrics

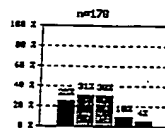
Information Works: "Information Works Demonstration" (259 completes)

Overall Satisfaction

The graphs below display responses to overall site metrics: overall evaluation of the site, likelihood of recommending the site, likelihood of revisiting the site. Click on the buttons at the bottom of the page to see these same metrics displayed by demographic segment: gender, age, income, Internet experience, frequency of visitation to your site.

Considering all factors, how satisfied are you with this site?

Legend
Very satisfied
Somewhat satisfied
Neutral
Somewhat dissatisfied
Very dissatisfied



How likely are you to visit this site again?

Legend
Very likely to visit
Somewhat likely to visit
Neither likely nor unlikely to visit
Somewhat unlikely to visit
Very unlikely to visit



How likely are you to recommend that a friend or colleague visit this site?

Fig 22A

Legend
Very likely to recommend
Somewhat likely to recommend
Neither likely nor unlikely to recommend
Somewhat unlikely to recommend
Very unlikely to recommend



Click on one of these buttons to see overall indicators by demographic segment

[Gender](#)
[Age](#)
[Income](#)
[Internet Experience](#)
[Frequency of Visitation](#)

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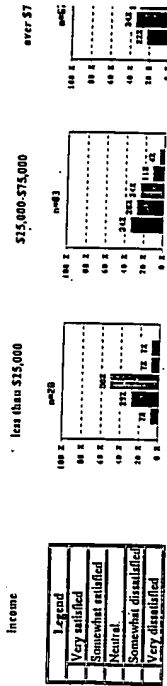
Fig 22B



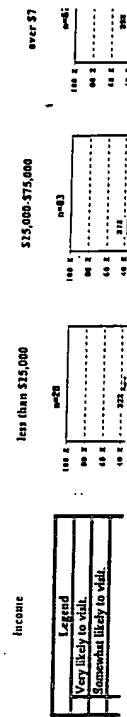
Information Works: "Information Works Demonstration" (261 completes)

Overall Indicators by income

Considering all factors, how satisfied are you with this site?



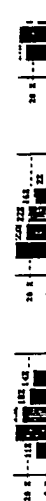
How likely are you to visit this site again?



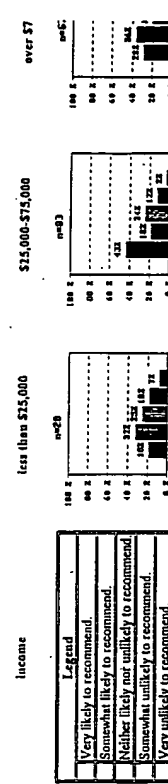
<http://reports.informationworks.com/cgi-bin/overall.pl>

Fig. 23n

Neither likely nor unlikely to visit.
Somewhat unlikely to visit.
Very unlikely to visit.



How likely are you to recommend that a friend or colleague visit this site?



Information Works: "Information Works Demonstration" (261 completes)

Click on one of these buttons to see overall indicators by demographic segment

Demographics: Age, Gender, Income, Education, Marital Status, Employment, Geographic Location

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Fig. 23f3



Information Works: "Information Works Demonstration" (259 completes)

Site Performance

These graphics provide valuable information about your website's performance on basic elements. Participants rated the importance of each attribute on a 1-7 scale and then indicated how they perceive your site's performance for each characteristic. A negative "gap" (importance exceeds performance) indicates opportunity for improvement. A positive "gap" suggests that your site has fulfilled visitors' expectations for this criteria.

Data for the attributes below are ordered from the most to least important criteria. Mean importance and performance ratings appear to the right of each graph.

q01.1/q01.2: First, please indicate how important each of these elements are to you when you are online. Then, we'd like to know your opinion as to how well "Information Works Demonstration" performed on each of these criteria.

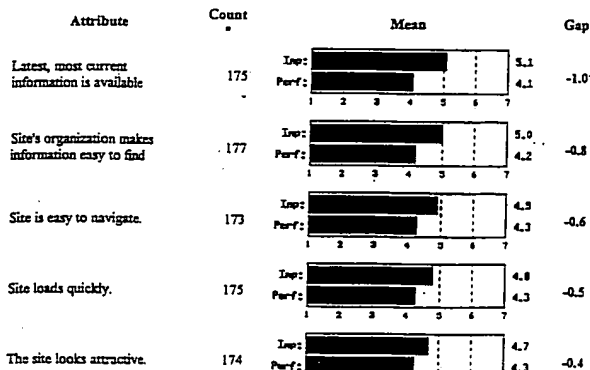
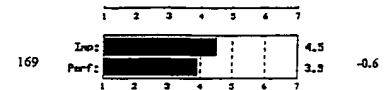
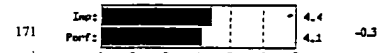


Fig 24A

Site contains valuable links.



Site contains valuable supplementary or educational resources



* Note: Only respondents who indicated both an importance and performance rating are included in this analysis.

Information Works: "Information Works Demonstration" (259 completes)

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Fig 24B

WebMetrics

Information Works: "Information Works Demonstration" (259 complete)

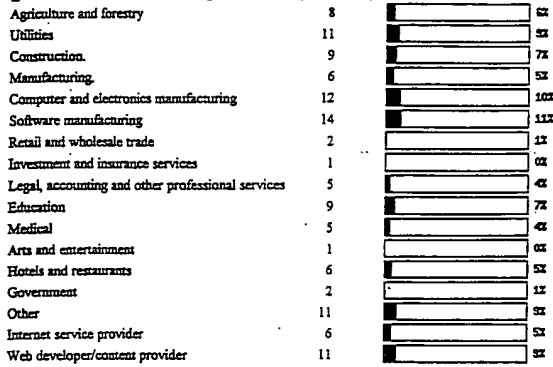
Demographics

The following graphics provide information on various demographic indicators of the respondents who participated in the survey.

Q01.10: Are you visiting this Web site for business or recreation?



Q01.11: Which one of the following best describes your industry?



Q02.1: Which best describes your job occupation?

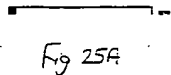
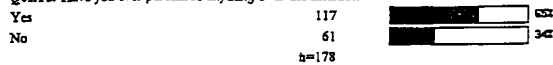
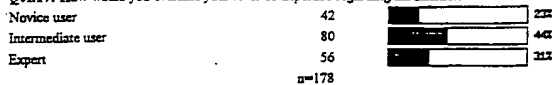


Fig 25A

Q01.16: Have you ever purchased anything over the Internet?



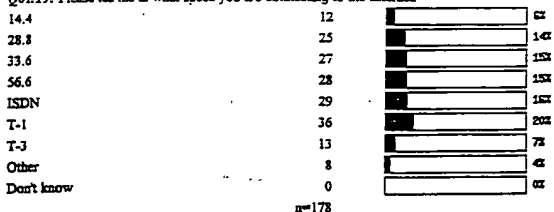
Q01.17: How would you evaluate your level of expertise regarding the Internet?



Q01.18: How often have you visited "Information Works Demonstration" before today?



Q01.19: Please tell me at what speed you are connecting to the Internet.



Q01.20: Please indicate which of the following Internet technologies you have on your computer.

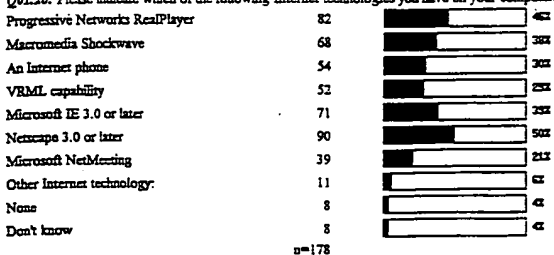
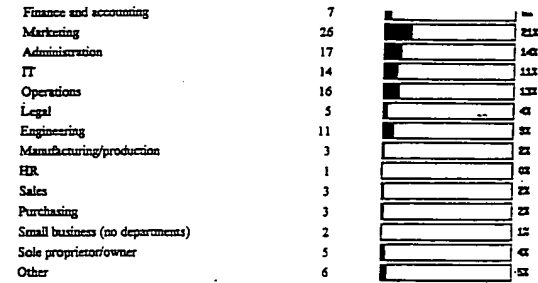


Fig 25C

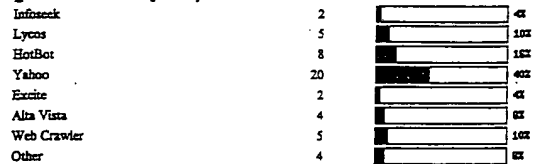
Summary Report



Q01.12: How did you most recently get to "Information Works Demonstration"?



Q01.13: Which search engine did you link from?



Q01.15: How frequently do you access the Internet?

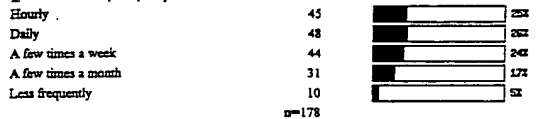
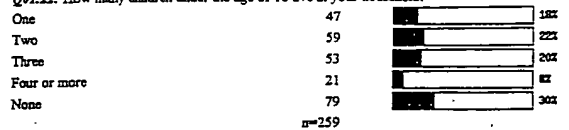


Fig 25B

Q01.21: Are you single or married?



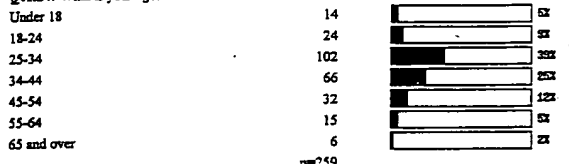
Q01.22: How many children under the age of 18 live in your household?



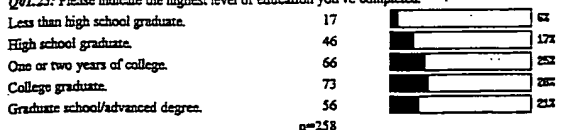
Q01.23: Are you male or female?



Q01.24: What is your age?



Q01.25: Please indicate the highest level of education you've completed.



Q01.26: Which of the following represents your total household income?

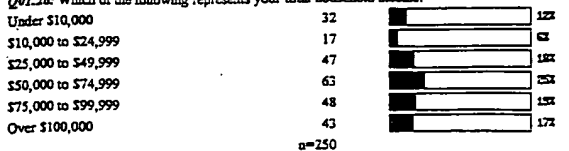
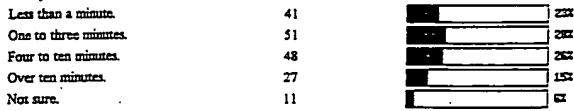


Fig 25D

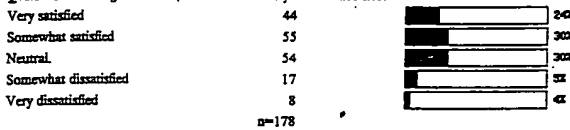
WebMetrics

Information Works: "Information Works Demonstration" (259 completed)

Q01.0: About how long did you spend exploring this site during this visit prior to beginning this survey?



Q01.3: Considering all factors, how satisfied are you with this site?



Q01.5: How likely are you to visit this site again?

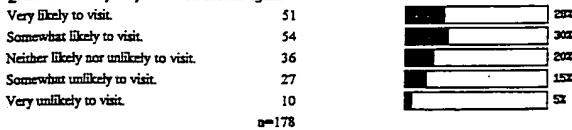


Fig. 26

WebMetrics

Information Works: "Information Works Demonstration" (259 completed)

Select a question for the banner:

Q01.0: About how long did you spend exploring this site during this visit prior to beginning this survey?

Q01.10: Are you visiting this Web site for business or recreation?

Q01.11: Which one of the following best describes your industry?

Q01.12: How did you most recently get to "Information Works Demonstration"?

Q01.13: Which search engine did you link from?

Q01.15: How frequently do you access the Internet?

Q01.16: Have you ever purchased anything over the Internet?

Q01.17: How would you evaluate your level of expertise regarding the Internet?

Q01.18: How often have you visited "Information Works Demonstration" before today?

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Fig. 27

Information Works: "Information Works Demonstration" (261 completed)

Q01.0: About how long did you spend exploring this site during this visit prior to beginning this survey?

Q01.10: Are you visiting this Web site for business or recreation?

Q01.11: Which one of the following best describes your industry?

Q01.12: How did you most recently get to "Information Works Demonstration"?

Q01.13: Which search engine did you link from?

Q01.0: About how long did you spend exploring this site during this visit prior to beginning this survey?		Q01.15: How frequently do you access the Internet?	
Less than a minute.	Total	Daily	Less frequently
44	44	10	4
24%	21,375	19,134	12,934
One to three minutes.	53	19	6
28.9%	40,496	31,556	23,836
Four to ten minutes.	48	11	0
26.7%	21,295	21,295	20,925
Over ten minutes.	27	6	0
14.7%	12,795	11,795	19,134
Not sure.	11	2	4
6%	6,726	3,926	12,934
Total	183	47	31
No Response:	0	0	0
	0%	0%	0%

Fig. 28

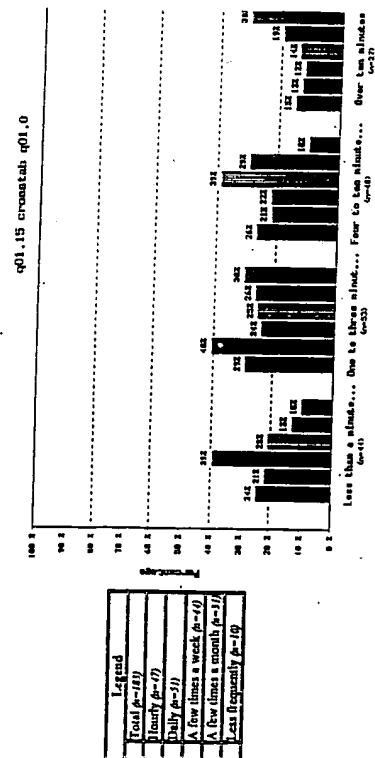


Fig. 28b

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/21693

A. CLASSIFICATION OF SUBJECT MATTER		
IPC Class : G06F 17/20 US CL : 705/10; 707/104; 709/202, 204 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) U.S. : 705/10; 707/104; 709/202, 204		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) APS, COMPUTER SELECT CD		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of documents, with indications, where appropriate, of the relevant passages	Relevant to claim No.
Y	PROCTOR, ROBERT W., "World Wide Web survey research: Benefits, potential problems and solutions", Behavior Research Methods, Instruments & Computers, 1997, p.274-279.	1-48
Y	READ, WALTER H., "Gathering Opinion On-line", HRMagazine, v.36 no.1 (1991), see all.	1-46
Y	POWELL, TIMOTHY "Do-it-yourself survey software", Marketing Companys, Feb. 1996, v.16 no.2, see all.	1-46
Y	US 4,603,232 A (KURLAND et al.) 29 July 1986 (29.07.1986), see abstract.	1-48
Y	US 5,784,562 A (DIENER) 21 July 1998 (21.07.1998) see abstract	1-33
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents:		
"A" documents defining the general state of the art which is not considered to be of particular relevance	"X" documents of particular relevance; the claimed invention claims to be considered novel or obvious in view of the document in which the document is cited	"Y" documents of particular relevance; the claimed invention claims to be considered to involve an inventive step when the document is taken into account
"E" earlier applications or patents published on or after the international filing date	"L" documents which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"P" documents published prior to the international filing date but later than the priority date claimed
"O" documents referring to an oral disclosure, use, exhibition or other means	"A" documents published after the international filing date in priority documents not seen in conflict with the application but cited to understand the principles or theory underlying the invention	"Y" documents of particular relevance; the claimed invention claims to be considered to involve an inventive step when the document is combined with one or more other such documents, such combinations being obvious to a person skilled in the art
Date of the actual completion of the international search 29 February 2000 (29.02.2000)		
Date of mailing of the international search report 21 MAR 2000		
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20531 Facsimile No. (703)305-3230		
Authorized officer D. Dinh <i>For Patricia Lopez</i> Telephone No. 305/4600		

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